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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,955	02/14/2002	William E. Coleman	2000068-0003	9848
24280	7590	11/14/2003	EXAMINER	
Choate, Hall & Stewart Exchange Place 53 State Street Boston, MA 02109			EVANISKO, LESLIE J	
			ART UNIT	PAPER NUMBER
			2854	

DATE MAILED: 11/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/075,955

Applicant(s)

COLEMAN ET AL.

Examiner

Leslie J. Evanisko

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*MLW*

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7, 9-14, 16, 18-22 and 24-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 20, 25 and 29 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9-10, 12-14, 16, 18, 19, 21, 22, 24, 26-28 and 30-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \*   c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7, 9, 12-14, 16, 18, 21-22, 26-28, and 30-33 are rejected under 35 U.S.C. 102(a) as being anticipated by Kayama et al. (JP 2001-199177). Kayama et al. teach a stencil for applying surface mount materials **70** comprising at least two layers **52, 80, 82**, the two layers including at least one reservoir pocket **52A, 54** and at least one delivery aperture **110** for delivering the surface mount materials to a surface **10**. See Figures 1-3 and the English language abstract/translation in particular. Note that since the stencil layers of Kayama et al. are adhesively affixed to one another and includes discrete openings within the layers to define the apertures and pockets, the at least one reservoir pocket and the at least one delivery aperture in the layers of the stencil inherently include contiguous and impermeable sidewalls at an adjoining interface as recited.

With respect to claim 2, Kayama et al. teach at least one relief area **90** for providing clearance for preexisting components on the surface.

With respect to claim 3, note the upper layer (**52** or **80**) has at least one reservoir pocket (**52A** or **54**) and the lower layer **82** has at least one delivery aperture **110** and at least one relief area **90**.

With respect to claim 4, note the upper layer **80** has at least one reservoir pocket **54** and at least one relief area **90** and the lower layer has at least one delivery aperture **110** and at least one relief area **90** as recited.

With respect to claims 5 and 14, note the stencil in Figure 2 has three layers including reservoir pockets **52A**, **54**, relief areas **90**, and delivery apertures **110** as recited.

With respect to claims 7, 16, and 22, note Kayama et al. teach the stencil layers can be formed out of metal in paragraph 0022 of the English language translation.

With respect to claims 9 and 18, note Kayama et al. teach the at least one delivery aperture is adapted to deliver a surface mount material such as solder paste in the English language translation attached.

With respect to claim 12-13, note Kayama et al. teach a stencil in Figure 2 with two layers and a step down pocket, as broadly recited.

With respect to claim 21, note Kayama et al. teach a stencil in Figure 2 comprising an upper layer with a reservoir aperture and a lower contacting layer with at least one relief delivery aperture as broadly recited. Again, note

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that the stencil of Kayama et al. has all of the structural limitations recited and is broadly capable of being used in the manner recited and therefore meets the claim language.

With respect to claims 26-28, Kayama et al. teach a method for depositing surface mount materials (i.e., solder paste or balls) onto a surface comprising matching relief areas in a stencil with preexisting surface mount components on a surface (i.e., a printed circuit board), affixing the stencil to the surface, applying surface mount materials to the stencil such that the surface mount materials fill reservoir pockets in the stencil, and depositing surface mount materials onto the surface through delivery apertures on the stencil, the delivery apertures drawing the surface mount materials from the reservoir pockets, and wherein the reservoir pockets and delivery apertures include contiguous and impermeable sidewalls at adjoining interfaces as recited. Again, see the English language translation of Kayama et al. and the above comments with respect to claim 1.

With respect to claims 30-33, note Kayama et al. teach the various layers can be made of specific resin materials in the English language translation (in paragraph 0022 on page 3) which can broadly be considered to be “solvent resistant” to some extent.

3. Claims 1-5, 9, 12-14, 18, 21, and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al. (JP 3-92390).

Takahashi et al. teach a stencil **1** for applying surface mount materials **6** comprising at least two layers **1a**, **1b**, **1c**, the two layers including at least one reservoir pocket **8** and at least one delivery aperture **5**, **7** for delivering the surface mount materials to a surface **14**. See, in particular, Figures 1-2 and 4 and the English language translation attached to this Office Action. Note that since the layers of Takahashi et al. are laminated together and include discrete openings within the layers, the stencil of Takahashi et al. inherently includes reservoir pockets and delivery apertures having contiguous and impermeable sidewalls at an adjoining interface as recited.

With respect to claims 2, Takahashi et al. teach at least one relief area **4** for providing clearance for preexisting components on the surface.

With respect to claim 3, note the upper layer (**1a** or **1b**) has at least one reservoir pocket **8** and the lower layer (**1b** or **1c**) has at least one delivery aperture **7** and at least one relief area **4**.

With respect to claim 4, note the upper layer **1b** has at least one reservoir pocket **8** and at least one relief area **4** and the lower layer has at least one delivery aperture **7** and at least one relief area **4** as recited.

With respect to claim 5, note the stencil in Figure 2 has three layers including reservoir pockets **8**, relief areas **4**, and delivery apertures **7** as recited.

With respect to claims 9 and 18, note the stencil of Takahashi et al. includes at least one delivery aperture adapted to deliver surface mount

materials such as solder paste in the third paragraph of page 12 of the English language translation.

With respect to claim 12-13, note Takahashi et al. teach a stencil in Figure 1 with two layers and a step down pocket, as broadly recited.

With respect to claim 14, Takahashi et al. teach a stencil **1** comprising an upper reservoir layer **1a** with at least one reservoir pocket **8**, a middle separation layer **1b** with at least one relief area **4** and at least one reservoir through pocket **8**, and a lower contacting layer **1c** with at least one delivery aperture **7** and at least one relief opening **4** as recited. See Figure 2 in particular.

With respect to claim 21, note Takahashi et al. teach a stencil **1** in Figures 1 and 2 comprising an upper layer with a reservoir aperture and a lower contacting layer with at least one relief delivery aperture as broadly recited. Again, note that the stencil of Takahashi et al. has all of the structural limitations recited and is broadly capable of being used in the manner recited and therefore meets the claim language.

With respect to claims 30-32, Takahashi et al. teach the stencil includes layers of laminated photosensitive resin material which is exposed to light to harden particular areas of the resin and then the non-hardened areas are removed using a solvent. Clearly the only areas of the stencil that are left (after removing the unhardened areas) are hardened areas of solvent resistant resin materials as recited.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 7, 16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (JP 3-92390) in view of Hewett (US 6,096,131). Takahashi et al. teach a stencil as recited, with the possible exception of the stencil layers being formed of metal. However, a multilayer stencil including individual metal layers is well known in the art, as exemplified



by Hewett in Figures 2A-3B and column 2, lines 6-7. In view of this teaching, it would have been obvious to one of ordinary skill in the art to make the different layers of the stencil of Takahashi et al. out of metal as taught by Hewett, as it would simply require the obvious selection of a known material based upon its known properties to provide a multi-layer stencil that has improved surface properties.

7. Claims 10, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of Takahashi et al. or Kayama et al. in view of Chan et al. (US 6,047,637). Each of Takahashi et al. and Kayama et al. teach a stencil as recited with the possible exception of the stencil layers being attached to one another by a dry-mount aqueous solder mask laminate. Note that Kayama et al. teach the two layers are affixed together with adhesion in paragraph 0022 of the English language translation and Takahashi et al. teach the layers are laminates in the English language abstract. Although neither reference specifically teaches the use of a dry-mount aqueous solder mask laminate, note that Chan et al. teaches a multilayer solder mask in which the layers are produced by dry-film lamination is well known in the art, in column 3, lines 13-23. In view of this teaching, it would have been obvious to one of ordinary skill in the art to attach the multilayer stencils of Takahashi et al. or Kayama et al. using dry-mount laminate as taught by Chan et al., as it would simply

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require the obvious substitution of one known laminate material for another to provide better fixing of the stencil layers to one another.

8. Claims 26-28 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-323675 in view of Takahashi et al. (JP 3-92390). JP 7-323675 teach a method for depositing surface mount materials onto a surface comprising matching relief areas in a stencil with preexisting surface components on a surface, affixing the stencil to the surface, and applying surface mount materials to the stencil to fill reservoir pockets in the stencil. JP '675 fails to teach the surface mount materials are deposited on the surface through delivery apertures which draw the surface mount materials from the reservoir pockets. Takahashi et al. teach a method of depositing materials to a surface including using a multi-layer stencil including reservoir pockets and delivery apertures to draw the material from the reservoir pockets to deposit it on the surface, wherein the reservoir pockets and delivery apertures have contiguous and impermeable sidewalls at adjoining interfaces. In view of this teaching, it would have been obvious to one of ordinary skill in the art to use the multi-layer stencil assembly as taught by Takahashi et al. in the process of JP '675, as it would simply require the obvious substitution of one known stencil structure for another, to provide more precise delivery of the surface material to the surface.

With respect to claims 27-28, note that both JP '675 and Takahashi et al. teach the surface is a circuit board and the surface material is solder. See the English language abstract of JP '675 and the third paragraph on page 12 of the English language translation of Takahashi et al.

With respect to claim 32, note the stencil of Takahashi et al. can be made of solvent resistant resin material, as set forth in the English language translation.

***Allowable Subject Matter***

9. Claims 11, 20, 25, and 29 have been allowed.
10. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or fairly suggest a stencil or method of depositing materials including all of the structure as recited, in combination with and particularly including, the upper layer and lower layer being aligned by means of at least one registration pin and at least one registration hole.

***Response to Arguments***

11. Applicant's arguments filed September 17, 2003 have been fully considered but they are not persuasive of any error in the above rejections.

In particular, applicant argues that neither Kayama et al. nor Takahashi et al. teach or fairly suggest that the reservoir pockets and delivery apertures

include contiguous and impermeable sidewalls at an adjoining interface and further argues that neither reference discloses any sidewalls as part of the delivery apertures and reservoir pockets. However, the Examiner disagrees with this argument for the following reasons: Firstly, it is the Examiner's position that since the different layers (made of metal or resin) of the stencils are affixed or laminated together and the layers have discrete apertures defining the delivery apertures and reservoir pockets, these apertures and pockets would inherently have contiguous and impermeable sidewalls at an adjoining interface. Furthermore, it is pointed out that if the apertures and pockets had permeable or noncontiguous sidewalls, the stencil of either of Kayama et al. and Takahashi et al. would not function properly or be operable because the paste material would ooze or flow between the various layers rather than being deposited onto the surface to be printed.

In view of the above reasoning, the Examiner is not persuaded of any error in the above rejections.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Leslie J. Evanisko** whose telephone number is **(703) 308-0786**. The examiner can normally be reached on M-Th 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew H. Hirshfeld can be reached on (703) 305-6619. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

*Leslie J. Evanisko*  
Leslie J. Evanisko  
Primary Examiner  
Art Unit 2854

lje  
November 6, 2003